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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,527	10/11/2001	Geoffrey W. Peters	INTL-0622-US (P11953)	9381
7590	12/15/2005			
Timothy N. Trop TROP, PRUNER & HU, P.C. 8554 KATY FWY, STE 100 HOUSTON, TX 77024-1805			EXAMINER JERABEK, KELLY L	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/975,527	Applicant(s) PETERS, GEOFFREY W.	
	Examiner Kelly L. Jerabek	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 10/3/2005 have been fully considered but they are not persuasive.

Response to Remarks:

Applicant's arguments (Amendment page2) state that the Song reference teaches a method of either sharpening pixels or implementing noise reduction by determining whether the pixels of interest constitute an edge in the image and therefore the reference does not teach evaluating the sharpness of portions of images on a pixel-by-pixel basis. The Examiner respectfully disagrees. Song discloses in figures 1-3 an image enhancement system (10) for enhancing image data by sharpening. The image enhancement system (10) evaluates images on a pixel-by-pixel basis and performs image sharpening or noise reduction based on the pixel value differences (col. 3, line 22-col. 5, line 5; col. 9, lines 20-39). Song states that pixel values are compared and based on the pattern of differences between pixel values and when it is determined that the pattern defines an edge line image sharpening is performed (col. 4, line 48-col. 5, line 5). Therefore, since the pixel values are sharpened when it is determined that the pixels constitute an edge in the image it can be seen that each pixel of the image has a

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sharpness value both before and after the sharpness correction. Thus, Song teaches evaluating the sharpness of the image data on a pixel-by-pixel basis.

Claim Objections

Claims 7-8, 17-18, and 27-28^{are} objected to because of the following informalities: These claims depend from cancelled claims 4, 14, and 24 which are now incorporated into claims 1, 11, and 21. Appropriate correction is required. However, for the purposes of examination the Examiner is treating claims 7, 17, and 27 as being dependent on claims 1, 11, and 21.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 7-13, 17-23, and 27-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Bender et al. US 5,657,402 in view of Song US 4,783,840.

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Re claims 1, 11, and 21, Bender discloses a method comprising: focusing an imaging device over at least two different focal lengths; and forming an in-focus image including objects at two different focal lengths (Bender teaches capturing a sequence of images to form a composite image) (col. 8, lines 13-62). Additionally, Bender discloses evaluating the sharpness of portion of images taken at two different focal lengths (Bender teaches applying a weighting function to warped frames of a sequence of images) (col. 17, lines 42-58). However, Bender fails to distinctly state that the sharpness of portions of the images are evaluated on a pixel-by-pixel basis.

Song discloses in figures 1-3 an image enhancement system (10) for enhancing image data by sharpening. The image enhancement system (10) evaluates the sharpness of images on a pixel-by-pixel basis (col. 3, line 22-col. 5, line 5; col. 9, lines 20-39). Therefore, it would have been obvious for one skilled in the art to have been motivated to include the concept of evaluating the sharpness of images on a pixel-by-pixel basis as disclosed by Song in the method of capturing a sequence of images to form a composite image disclosed by Bender. Doing so would provide a means for enhancing pixel values on a pixel-by-pixel basis (Song: col. 1, lines 45-50).

Re claims 2, 12, and 22, Bender discloses automatically focusing an imaging device to at least two different focal lengths (see claim 1 above).

Re claims 3, 13, and 23, Bender teaches capturing a sequence of images from a short focal length to a long focal length and using the sequence of images to form a composite image. Bender does not expressly disclose enabling the user to manually adjust the focal lengths. However, the Examiner takes Official Notice that manual operation of camera functions such as focal length adjustment is well known in the art. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bender's teachings by enabling the user to manually adjust the focal lengths as an obvious variation to automatic control.

Re claims 7, 17, and 27, Bender discloses comparing sharpness values of two captured frames and weighting pixels having sharpness values indicating better focus more than pixels that have sharpness values indicating poorer focus (Bender teaches weighting frames of a higher resolution more heavily than frames of a lower resolution and thus inherently compares the frames respective sharpness values) (col. 17, lines 42-58).

Re claims 8, 18, and 28, Bender discloses generating a composite image containing image portions taken over at least two different focal lengths by comparing the quality of focus of two different image portions and weighting the image portion with better focus (Bender teaches weighting frames of a higher resolution more heavily than frames of a lower resolution and thus inherently compares the frames respective sharpness values) (col. 17, lines 42-58).

Re claims 9, 19, and 29, Bender discloses transforming a subsequent frame to match the characteristics of a pervious frame taken at a different focal length (Bender teaches warping subsequent frame to match the first) (col. 8, line 51-col. 9, line 52).

Re claims 10, 20, and 30, Bender discloses transforming the size of one of the two frames taken at different focal lengths (Bender teaches mapping smaller portions of a scene into a larger data space) (col. 8, line 51- col. 9, line 52).

Claims 1-2, 6, 8-12, 16, 18-22, 26, and 28-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota et al. US 6,118,484 in view of Song US 4,783,840.

Re claims 1, 11, and 21, Yokota discloses a method comprising: focusing an imaging device over at least two different focal lengths; and forming an in-focus image including objects at two different focal lengths (Yokota teaches capturing images of objects located at different distances by driving the focus lens group and combining the image data to form a composite image) (col. 6, line 57- col. 8, line 13). However, Yokota fails to distinctly state that the sharpness of portions of the images are evaluated on a pixel-by-pixel basis.

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Song discloses in figures 1-3 an image enhancement system (10) for enhancing image data by sharpening. The image enhancement system (10) evaluates the sharpness of images on a pixel-by-pixel basis (col. 3, line 22-col. 5, line 5; col. 9, lines 20-39). Therefore, it would have been obvious for one skilled in the art to have been motivated to include the concept of evaluating the sharpness of images on a pixel-by-pixel basis as disclosed by Song in the method of capturing a sequence of images to form a composite image disclosed by Yokota. Doing so would provide a means for enhancing pixel values on a pixel-by-pixel basis (Song: col. 1, lines 45-50).

Re claims 2, 12, and 22, Yokota discloses automatically focusing an image device to at least two different focal lengths (see claim 1 above).

Re claims 6, 16, and 26, Song discloses evaluating sharpness on a pixel-by-pixel basis and storing sharpness information in an alpha channel (processor 12) associated with each pixel (col. 3, lines 22-58). Also, the pixel values that are stored do not include color information.

Re claims 8, 18, and 28, Yokota discloses generating a composite image containing image portions taken over at least two different focal lengths by comparing the quality of focus of two different image portions and weighting the image portion with better focus (Yokota teaches capturing image of objects located at different distances

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by driving the focus lens group and combining the image data to form a composite image) (col. 6, line 57 – col. 8, line 13).

Re claims 9, 19, and 29, Yokota discloses transforming a subsequent frame to match the characteristics of a previous frame taken at a different focal length (Yokota teaches an affine transformation) (col. 16, lines 44-52).

Re claims 10, 20, and 30, Yokota discloses transforming the size of one of the two frames taken at different focal lengths (col. 16, lines 44-52).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly L. Jerabek whose telephone number is (571) 272-7312. The examiner can normally be reached on Monday - Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on (571) 272-7320. The fax phone number for submitting all Official communications is 703-872-9306. The fax phone number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at (571) 273-7312.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KLJ



NGOC YEN VU
PRIMARY EXAMINER